

# ANALYSIS

Edited by  
Margaret Macdonald  
with the advice of

A. J. Ayer	A. E. Duncan-Jones
R. B. Braithwaite	C. A. Mace
Herbert Dingle	A. M. MacIver
H. H. Price	

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OF MICHIGAN

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## ANALYSIS COMPETITION FIFTH "PROBLEM"

A report on the fourth "problem" set for solution by Professor Gilbert Ryle in *ANALYSIS* for June, 1953, together with any winning entries, will be published in the next issue of *ANALYSIS* for January 1954.

The fifth "problem" is set by Professor A. J. Ayer of London University, and is as follows :

**" DOES IT MAKE SENSE TO SAY THAT DEATH IS  
SURVIVED? "**

Entries (of not more than 600 words), accompanied by a stamped, addressed envelope or international stamp voucher if the return of the MSS. is desired, should be sent to : **THE EDITOR OF "ANALYSIS" BY FRIDAY, APRIL 23rd., 1954.** *No entries should be sent to Professor Ayer.* Contributors may submit entries either under their own names or a pseudonym. A report, together with any winning entries, will be published, if possible, in *ANALYSIS* for June 1954.

THE EDITOR.

**" COGITO, ERGO SUM "**

By A. J. AYER

**I**S there any proposition which it is impossible to doubt? Descartes, who asked this question, answered it by saying that whatever else he might be able to doubt, he could not doubt that he existed. For his very doubting was a species of thinking ; and the fact that he existed followed, logically from the fact that he thought. Thus the surmise that I do not exist is held to be self-defeating. For I must exist in order even to conceive that I do not. And so, according to Descartes, one may draw the conclusion that " this proposition, *I am, I exist*, is necessarily true, each time it is expressed by me, or conceived in my mind ".

I have always been puzzled by this argument. To begin with it is not clear by what criterion we are to decide whether or not a proposition is open to doubt. It may be suggested that we are meant to regard a proposition as indubitable if and only if it is necessarily true. But if this were so, it would seem arbitrary to single out "*cogito, ergo sum.*" That I exist if I think is indeed a necessary proposition in the sense that my thinking logically entails that I exist ; but, on this interpretation the necessity of "*cogito, ergo sum*" is a property that it shares with countless other propositions. In this sense, all the propositions of formal logic are equally indubitable. Nevertheless, there is a sense, admitted by Descartes, in which such necessary propositions are not indubitable. One can make mistakes in logic ; and so,

on any given occasion one may come to doubt whether one's reasoning is correct. "I believe that this is a valid inference, but perhaps this is just one of the cases in which the malicious demon is deceiving me. How can I be sure that it is not?" The answer is that if nothing is going to make me sure then clearly I cannot be sure. If I am dealing with a formal system, there will be rules to which I can refer, I can go through my argument again, I can check it against other inferences, I can test it by trying to find a counter-example. But what guarantee have I that I have carried out these procedures correctly? How can I be certain that I have not made a slip? Again, the answer is that I can have a guarantee only if I allow something to count as a guarantee. There are ways in which I can satisfy myself that I am not making a mistake. But if it is a fact that I am not, it is an empirical fact. A proposition of logic is necessarily true if it is true at all; but a proposition with regard to any given person that he is, at a given moment, asserting, or believing, a necessary proposition is itself empirical and not necessary. Consequently, in this sense, all necessary propositions may be doubted, including the proposition that if I think I exist. For that "*sum*" follows from "*cogito*" depends upon the rules which govern the user of "*cogito*" and "*sum*", and it is always open to doubt whether one is applying such rules correctly. Once more, this is a futile sort of doubt. I can dispose of it by making a resolution never to assert "*cogito*" on any occasion on which I am not prepared to assert "*sum*". But, even so, that I consistently adhere to this resolution is an empirical and not a necessary fact. Accordingly, if all empirical propositions are to be regarded as doubtful, then this doubt also cannot be settled. But if it cannot be settled, it is pointless. If nothing is to count as being certain of the truth of any proposition, then it is necessarily true, in this sense, that no proposition is certain. The malicious demon triumphs by definition; and just for that reason there is no call to bother with him.

Descartes, however, took the demon seriously; yet he thought it impossible that he should be deceived in the case of "*cogito, ergo sum*". And the reason for this is not that "*sum*" is a logical consequence of "*cogito*", but that each of them can be distinguished from other propositions in the following way. If I say, for example, that I doubt whether the battle of Waterloo was fought in 1815, or that I doubt whether  $2+2=4$ , in both cases the proposition which I claim to doubt is true. In the second case it is necessarily true. But in neither case does the truth of the proposition which I doubt follow from the truth of the proposition that I doubt it. On the other hand, the truth of the proposition that I am thinking does follow from the truth of the proposition that I am doubting if I think, and so does the

truth of the proposition that I exist. Thus, the sense in which the proposition "I think, therefore I exist" cannot be doubted is that if either "I think" or "I exist" is taken as a value of the variable " $p$ " in the propositional function "I doubt that  $p$ ", it follows that what I am doubting is true. In short, what makes "*cogito*" indubitable is just that its truth follows from the fact that it is doubted, and the same applies to "*sum*".

Even so, the malicious demon is not wholly baffled. For let " $a$ " be the proposition that I exist, and let " $b$ " be the proposition that " $a$ " follows from "I doubt that  $a$ ." Now " $a$ " does follow from "I doubt that  $a$ ", but " $b$ " does not follow from "I doubt that  $b$ ". Accordingly, if we are going to say that I can legitimately doubt a proposition in all cases except that in which its truth follows from the truth of the proposition that I doubt it, then I cannot legitimately doubt that I exist; but the proposition that I cannot legitimately doubt that I exist is itself one that I can legitimately doubt. For it is equivalent to the proposition " $b$ "; and since " $b$ " does not follow from "I doubt that  $b$ ", it is, in this sense, open to doubt. Thus the use of this criterion leads to the curious result that while my existence is indubitable, the indubitability of my existence is not. Furthermore it has not been shown that what is indubitable, in this sense, is necessarily true. To say, as Descartes does that the proposition "*sum*" is necessary whenever I express or conceive it is to say merely that "*sum*" follows from "*cogito*". But that "*cogito*" itself is necessary has not been proved.

A way to prove it would be to show that "*cogito*" was formally demonstrable. Thus, provided that "*cogito*" and "*non-cogito*" are significant, their disjunction is necessary, and it might be argued that "*cogito*" was demonstrable on the ground that it followed from both alternatives; from "*cogito*" self-evidently, and from "*non-cogito*" inasmuch as the proposition that I am not thinking is itself the expression of a thought. But this is to equate the proposition that I am not thinking with the proposition that I think that I am not thinking, and these two propositions are not equivalent. On the contrary, if "I am not thinking" is true then it is false that I think that I am not thinking, and if it is true that I think that I am not thinking, then "I am not thinking" is false.

But can "I am not thinking" ever be true? Yes, very easily, so long as the personal pronoun is understood descriptively. If I am unconscious, I am not thinking: if I do not exist, I am not thinking. And while I am in fact conscious at this moment, I very well might not be: I might not exist even though I do. I have been unconscious, and there was a time when I did not exist; and then, if *per impossibile* I could have expressed it, the proposition "I am not thinking" would have been

true. Of course the point is that I could not have expressed it. I cannot say the words "I am not thinking" unless I exist; and although I may say the words "I am not thinking" without its being true that I am thinking, and so be understood by someone else to be expressing a proposition which is in fact true there is a sense in which I do not express this proposition unless I am thinking; for, in one sense at least, to express a proposition is to use words intelligently. Thus, the peculiarity of "*non-cogito*" is that if anyone intelligently asserts it, it is false. But this is not to say that it is formally self-contradictory.

What makes it appear self-contradictory is the use of the personal pronoun, as can easily be seen if one replaces the pronoun by a name or a description. If Descartes asserts that Descartes is not thinking, what he asserts is here again made false by his asserting it, but there is no temptation to suppose that the proposition "Descartes is not thinking" is self-contradictory. On the contrary, there is every reason to believe that it is at this moment true. Now one way of differentiating between "Descartes is not thinking" and "I am not thinking", on the assumption that both are asserted by Descartes, is to hold that in the second case he uses a pure demonstrative, whereas in the first he does not. As a pure demonstrative the word "I" has no connotation, but it can perhaps be interpreted as pointing to someone who is thinking. Suppose that we accept this interpretation. In that case it does follow that "*non cognito*" cannot state a truth. But the reason for this is not that the proposition which it expresses becomes self-contradictory, but that it ceases to express any proposition at all. The subject-word "I" points to something which, according to the predicate, does not exist; but for an affirmation or denial of existence to be significant it is essential that that of which the existence is in question should be not merely pointed at but in some measure described. And for the same reason "*cogito*" also is divested of its meaning; for what it purports to state, on this interpretation, adds nothing to what is already shown by the use of the demonstrative. Furthermore it remains a contingent, and not a necessary, fact that there is something to which the demonstrative applies.

The same considerations apply to "*sum*". If the word "I" is taken as a pure demonstrative, then it makes no sense to say either that I exist or that I do not exist. The contexts in which these statements do make sense are those in which the demonstrative is tacitly replaced or reinforced by a description. But so long as the pure demonstrative is retained, the expression "I exist" serves merely to point to some experience that I am having, and so does the expression "I do not exist". Moreover it is again a contingent fact that there is something to which the demonstrative applies. What is necessarily true is that I am having the



experience that I am having, but from this it does not follow either that it is necessary that there should be any such experience or that any description that I may give of it is correct, or even that it is the experience of any person, if its being the experience of some person is understood to imply that it is in any way related to anything other than itself.

*University College, London.*

## PROPOSITIONS ASSERTING CAUSAL CONNECTION

*By J. WATLING*

MY argument runs as follows: first I point out the reasons for being dissatisfied with an account of causal propositions on the lines that A is the cause of B if all events like A are followed by events like B. Then I deal briefly with some of the attempts to repair the defects of this explanation. Finding that none of these is entirely convincing I investigate attempts of another kind, one of which I do find convincing. It so happens that the distinction made in this way between statements of accidental connection and statements of causal connection applies as well to singular as to general propositions and I argue that all the distinctive properties of statements of causal connection may be possessed by singular propositions. I can think of no conclusive argument for the view that a causal proposition need not be general, but I think that I show that most of the reasons for supposing that they must be are not good reasons.

It is notorious that there is a large class of general conditionals which do not entail causal propositions. For example, "No satellite of the earth has an atmosphere" does not entail "Being a satellite of the earth prevents a body from having an atmosphere". Hence it cannot be that the fact that A accompanied B, and that all events like A are accompanied by events like B, is a logically sufficient ground for the assertion that A caused B. Neither can the fact that the property P is always coinstantiated with the property Q be a sufficient ground for the assertion that the property P gives rise to the property Q. Of course it may be that these conditions, each of which Mill and Schlick took as sufficient for a causal connection, are nevertheless necessary.

My second objection to recognizing a causal connection if, and only if, a general non-logical inference holds is also a familiar one. Were this analysis correct, then in order to assert a causal proposition it would be necessary to assert a causal law. For if to say that A caused B were merely to say that both A and B happened, and that the proposition "If A, then B" could be derived by substitution in some true generalization, then

nearly all pairs of events would be causally connected. For by restricting the generalization it would nearly always be possible to avoid counter-examples. For instance, if R. H. Tawney asserted "Protestantism in England caused Capitalism in England" he could protect himself against any counter-example by arguing that the example was not sufficiently like Protestantism in England, and probably he could find a true generalization from which to derive the particular conditional about Protestantism in England. Therefore it is not sufficient that a causal proposition should state that some generalization holds, it must state explicitly what the generalization is. For if it does not, then the assertion is not sufficiently precise to be significant. But this consequence is false: a great many causal propositions do not include general conditionals. Perhaps the best examples are statements about psychological events. We often say that our present images were caused by antecedent perceptions, or that our present sensations are caused by physical objects standing around us. Yet we could certainly not specify the laws which we suppose to hold between our perceptions and our images, or between physical objects and our sensations. We do not even suppose that most of our perceptions are followed by images which resemble them or that most of our images were preceded by perceptions. Of course we do suppose that causal laws relating these sorts of events may be discovered, but we make the causal assertions now, before the discoveries have been made, or at least in ignorance of their nature.

This objection holds against the view that the definition given by Mill and Schlick provides a necessary condition for causal connection, not merely against the view that it provides a sufficient condition. So far as I can see the only way to avoid the objection is to maintain that the causal assertions of common sense are very often too vague to be significant. But surely we can meaningfully say "It was your remark that made him angry but I cannot explain why it did so", and surely it is not true that any fault in a man's explanation falsifies his causal assertion: for if his assertion has the form "A was accompanied by B, and if an event is p, q, and r, as A was, then it is u, v, and w, as B was", then falsifying the law which provides the explanation will falsify the whole assertion. Ordinarily we often say that a man was right in asserting two events to be causally connected but wrong in his explanation of the connection.

Various explanations have been given of the distinction between laws and other general conditionals in attempts to amend this definition. For example it has been held that the difference lies in the fact that laws are never restricted in their application to small stretches of space and time. The absence of this restriction may or may not be a necessary condition for a



true proposition to be a law but that it is not a sufficient condition is shown by the example about satellites of the earth, which has no such restriction and yet is not a law. Neither is it sufficient to require that no mention of particular bodies or particular points of space and time be made, for consider the sentence "No satellite of a body weighing two million tons has an atmosphere" which need not be used to express a law.

Most solutions of the problem consist in denying flatly that general statements of accidental connection are general. Popper<sup>1</sup> claims, for example, that the classes of objects to which they refer are defined "in extension" and not "in intension". Exactly what this means is not clear, but since "All satellites of the Earth are without atmosphere", a statement of accidental connection, can be expressed as a universally quantified propositional function in which any name can be substituted for the variable, it is not easy to see how the class of satellites of the Earth can be said to be defined "in extension".

Another solution of this type has been given recently by P. Long.<sup>2</sup> He distinguishes between the sentences "Every raven is black" and "Anything, if it is a raven, is black", claiming that the first expresses an accidental connection and the second a law. He believes that the difference arises because the expression 'every raven' "is used to refer distributively to the class of ravens", whilst no expression in "Anything, if it is a raven, is black" is used to refer to anything at all. Now an expression is used referringly when it is used to pick out objects, in order, perhaps, that their properties may be described. Long is arguing that the term 'every raven' is used to pick out the members of the class of ravens so that something may be said of each of them, whilst no term in "Anything, if it is a raven, is black" picks out any objects. It might be possible to say what "Every raven is black" says by asserting "Every living thing on Skokholm is black"; this would be possible if there were no living things on Skokholm except ravens and if no ravens existed anywhere else. It would not be possible to find such an equivalent for "Anything, if it is a raven, is black". On Long's view statements of accidental connection merely assert that each member of some collection has a certain property, whilst laws assert a connection between having one property and having another. I think it very improbable that any ascription of a property to an individual, or to each one of a collection of individuals, could be an assertion of a causal connection, except where the property is a dispositional one, but it does not follow from this that no causal propositions make reference to individuals. It is possible, also, that the assertion that every raven is black may be the expression of an accidental connection and

<sup>1</sup> K. Popper, *Mind*, LVIII, January 1949.

<sup>2</sup> *ANALYSIS*, Vol. 13, pp. 18-23.

yet not involve reference to the members of the class of ravens. "Every raven is black" may be used to say the same as "Every living thing on Skokholm is black" would say if all the ravens, and no living things but ravens, lived on Skokholm. But it may also be used in another way: it may be intended to be equivalent to "Everything is either not a raven or black" and there seems to be no good reason for affirming that this proposition makes a reference if it is denied that "Anything, if it is a raven is black" makes a reference.

Long is correct in his assertion that anyone who states an accidental connection "anchors himself to the actual" in a way that no one stating a law does; but he is wrong in supposing that statements of the first kind can be made only with the help of referring phrases and that those of the second may make no reference at all. Clearly I do not "anchor myself to the actual" if I refer to Paris and consider what would follow if it were not so gay as it happens to be.

One of the facts that has to be explained in considering the difference between statements of accident and statements of law is that it is much easier to discover the truth of the former than of the latter. It is simpler to find out that no satellite of the earth has an atmosphere than to find out whether none could have. It is this fact that led many philosophers to question the generality of statements of accidental connection. A. J. Ayer has pointed out that, though statements of both kinds are general, the statement of accidental connection says, for example, of everything that either it is not a satellite of the earth or it is without atmosphere whilst the law says of everything that if it were a satellite of the earth, then it would be without atmosphere. It is easy to decide the truth of "Either Jupiter is not a satellite of the earth or it is without atmosphere" and very difficult to decide that of "If Jupiter were a satellite of the Earth, then it would be without atmosphere". The subjunctive conditionals express the fact that becoming a satellite of the earth has the effect of removing atmosphere, or that nothing has an atmosphere anyway. The general subjunctive conditional comes nearer to expressing a causal law than the general truth functional conditional, for the subjunctive would not be true merely because none of the bodies with atmosphere happened to be satellites of the earth. It does not express a causal connection, however, because it might be true merely because no body had an atmosphere, satellite of the earth or not. This distinction between statements of accidental connection and statements that express a connection which is more probably law-like is a distinction between the singular conditionals entailed by the general propositions. It enables us as easily to distinguish between "If Caesar fought the battle, then it was fought in his

style" and "If Caesar did not fight the battle, then still it was fought in his style."

G. E. Moore implies, in his paper on Indirect Knowledge,<sup>1</sup> that to say that I know F because I knew E is to say that had I not known E, then I should not have known F, and it might be supposed that subjunctives of this kind express causal connections. But this condition is too strong. For it might well be that although I do know F because I knew E, yet had I not known E I would not have known F because I would have known G instead of E. If I say "This bar conducts heat because it is made of copper" I do not exclude the possibility that if the bar had not been made of copper it would have conducted heat, for had it not been made of copper it might have been aluminium.

The condition Moore suggests is too strong, but neither is it strong enough; it does not in any way support the assertion that knowing E is a sufficient condition of knowing F. The fact that had I not known E I should not have known F is compatible with knowing E and not knowing F and hence compatible, if I did know E and know F, with the fact that the connection between these last two facts was accidental. Suppose that on nearly all occasions when I knew E, I did not know F; this would be evidence that the connection between the two was accidental.

To express the fact that A caused B we have to say that A happened and B happened and that, A having happened, B had to happen. The definition which Moore suggested does not express the last requirement. Can a satisfactory analysis of it be found?

Suppose I assert "If he becomes a good chess player, then he will be Pope". Someone might take me to be using this sentence as a rather perverse way of saying that he will never become a good chess player. So I say, "No, that is not what I mean, even if he becomes a good chess player, then he will be Pope". But still they might suppose that I was using the sentence to emphasize that whatever happened he would become Pope, and to avoid this interpretation I say "No, if he is not going to be Pope, then he will not become a good chess player". The last assertion clinches the causal connection. There is now no room for doubt that I am maintaining that his becoming a good chess player will make him Pope.

One more example, a conversation between Alice and the March Hare:

*Alice*: Let's have some bread and butter.

*March Hare*: Oh, we never have that here.

*Alice*: That is because you have no butter, I suppose?

*March Hare*: Not at all, as a matter of fact we have no butter,

<sup>1</sup> *Aristotelian Society Supplementary volume IX*, 1929.

but even if we had we should have no bread and butter.

*Alice* : Then it must be because you have no bread?

*March Hare* : Certainly not, we haven't any bread, of course, but even if we had plenty of bread we should have no bread and butter.

*Alice* : Then either the bread drives out the butter or the butter drives out the bread.

*March Hare* : Yes, one or the other always happens, but we can never find out which.

Anyone who asserts that bread causes the absence of butter says that bread and butter will not both be present, even if there is bread, and even if there is butter. Similarly anyone who says that A caused B says that A and not B could not have happened, even if A had happened and even if B had not happened.

"A caused B" is, on this analysis, "A happened and B happened, and if B had not been going to happen, then A would not have happened". To say that A would cause B is to say that if A should happen, B would happen, and if B is not going to happen, then A will not happen. We can now see what is needed to make "If x were a satellite of the Earth, then x would have no atmosphere" into a causal assertion; it is "If x had an atmosphere, then it would not be a satellite of the Earth".

I think that this analysis of propositions asserting causes has never been suggested because no one has seen that a subjunctive conditional does not entail its contrapositive. Clearly it does not, consider "If you were to go into the restaurant at mid-day, then it would be full of people", this does not entail "If the restaurant were not full of people, then you would not go into it at mid-day". There is every reason to believe the first and very little reason to believe the second. Most people who accepted the first would do so merely because they believed the restaurant to be full at mid-day, and therefore they would probably not accept the second. Anyone who does believe both believes that it will not be the case that you will go into the restaurant at mid-day and the restaurant not be full of people. And he believes this not merely because he believes that you will not go into the restaurant, and not merely because he believes that the restaurant will be full of people, hence he must believe in some causal connection between your entering the restaurant and its being full.

General statements of causal connection are distinguished from statements of accidental connection by the type of singular conditional which they entail. These singular conditionals have most of the logical properties which are supposed to be characteristic of laws. They are easy to falsify, "A will cause B" is false if A happens without B, but difficult to verify, for "If not B, then

not A" is difficult to decide if A and B both happen, that is if "If A, then B" can be verified by observing the occurrence of both A and B. They are not entailed by any statements describing actual occurrences or actual observations. Not only this but they seem to express what is meant by "This caused that", "This gave rise to that", without being subject to any of the difficulties that arise over causal propositions on the theory that they are implicitly general. I conclude, therefore, that singular causal propositions are in fact singular and that general truth functional conditionals provide evidence for, but do not entail, singular causal propositions.

It is now clear why "Every raven is black" cannot express a law-like connection when the expression 'Every raven' is used referringly. For it would make little sense to say of a particular raven "If this thing had not been black, then it would not have existed", although it makes good sense to say "If this thing had not been black, then it would not have been a raven". Perhaps this last statement is a referring statement that expresses a cause, but there are no statements attributing non-dispositional properties to particular objects which express causes.

*University College, London.*

## PROFESSOR AYER ON INDIVIDUALS

By PETER A. CARMICHAEL

ARE individuating terms, or 'indicators' as Prof. A. J. Ayer calls them, nothing more than shorthand predicates? In what does the distinction between individual and property consist? These questions are expounded and somewhat uncertainly answered by Prof. Ayer in a recent article.<sup>1</sup>

The principal points of Prof. Ayer's showing are, I believe, the following. Predicative expressions may be taken to signify situations and to apply to occasions, the terms 'situation' and 'occasion' being undefined though a situation is something capable of exemplification and is repeatable, and an occasion is what exemplifies a situation and is not repeatable. A situation can always be re-expressed in terms of occasions: Prof. Ayer's writing his paper is an occasion, and it exemplifies the situation of a person writing, as well as numerous other situations. Occasions must be empirical. Expressions for situations must accordingly admit of translation into terms signifying observable things.

The question, Are indicators shorthand predicates?, can be resolved into three other questions: (a) For every descriptive

<sup>1</sup> *Mind*, Vol. LXI, No. 244.



statement containing an indicator, can we find a logically equivalent statement in which all the non-logical signs are predicates? (b) Could a language without indicators describe the things meant by indicators? (c) If the answer to (a) is negative, what is the work of indicators?

The answer to (a) is negative, for such reasons as the following. Proper names and pronouns can hardly be replaced by definite descriptions or by indefinite descriptions having unique application, because of difficulties which have been shown to beset the theory of descriptions. Nor does the device of verbalizing proper names so as to supply predicates *ad hoc* fulfill the need. The predicate 'being Truman', for example, might not be instantiated at all or it might be instantiated numerous. And although we might happen to find what were in fact uniquely instantiated predicates, we could not prove that they were such, and could only hold them to be such by reason of our failure to discover additional instantiations of them.

The answer to (b) is affirmative since the descriptive power of a language depends on what predicates the language contains, and these may be ample for the requirements here.

To (c) the answer is that indicators, though not themselves descriptions, do duty for descriptions by pointing us to occasions which instantiate the descriptions or which we think instantiate them. But there may be uncertainty about what an indicator means, or about what is instantiated in a given case. To overcome this we must be able to substitute satisfactory descriptions in place of the indicator—satisfactory, that is, to the user of the indicator.

The belief that indicators signify complexes of properties, as well as the belief that they signify substances underlying properties, is mistaken. Indicators are not signs of substances and are not descriptions of anything; consequently they are not shorthand descriptions. They signalize occasions and thereby do the work of individuators, but they tell us nothing that could not be told by predicates.

There can be no guarantee that any description individuates; for if it is a simple description and is instantiated, the instantiation may not be unique, though it may be mistakenly thought to be unique; and if it is a complex description, it may admit of yet more complexity and so outrun our means of telling whether anything instantiates it. There is, however, no need of a guarantee of individuation. The only need is that the user of an individuating expression be exactly understood, and this will be the case whenever the person addressed gives back a description which the first recognizes to fit his intention. Even then it is not necessary that the expression have been one which is uniquely instantiated.



There are difficulties and, I think, shortcomings in this view of individuation, some of which are the following.

(1) If a situation is nothing more than a set of occasions, and if occasions are not repeatable, then a situation will not be repeatable. This contradicts the premise that situations are repeatable. It may not affect the outcome of Prof. Ayer's analysis, but, if not, it must indicate that 'situation' is a needless term in the analysis. And in that case predicates are fictions and Prof. Ayer is only restating the old view that particulars alone are real.

(2) If a situation is repeatable, yet is only occasions, then occasions must sometimes be repeatable. This contradicts the premise that occasions are never repeatable, and though it may not affect the soundness of Prof. Ayer's analysis, again it indicates that 'situation' is either misconceived or needless.

(3) If a situation is the same as or 'reducible to' the exemplifying occasions, and so is unrepeatable, then it will denote something unique; which will make every description the mark of an individual. This is contrary to Prof. Ayer's conclusion that there is no sure mark of an individual.

(4) If a situation is not just the same as the occasions that exemplify it; if it is or entails a relation holding among occasions, *e.g.* the relation of similarity, or if it is occasions held in this relation; then either the relation itself must be turned into occasions (Prof. Ayer does not venture this, though he says that relations are ingredients in occasions) or else, contrary to his holding, situations do not resolve into occasions.

(5) Why cannot occasions recur? Is it not, for one thing, because of spatio-temporal limits? As 'occasion' is not defined, we cannot be sure. However, since occasions, in Prof. Ayer's usage, require observability and since that is spatio-temporal, it is apparent that occasions are spatio-temporal and for that reason not repeatable. But if they are not repeatable, they must be individuals on any plausible conception of individual. Ayer says, however, that the spatio-temporal character of physical objects is not something unique but resolves into qualitative resemblance between sets of occasions. This, I presume, means that physical objects are not individuals; which seems to entail that they are not unrepeatable, contrary, I presume, to Ayer's assumption. One wishes that he had defined 'occasion'.

(6) He says there is no guarantee that any description individuates, because of the possibility either of increasing the description's complexity or of overlooking multiple instantiations of it as it stands. But increasing the complexity of a description need not keep some one thing from exclusively instantiating it. There are, for example, many descriptions of Napoleon which are elaborated far beyond what we might think sufficient for his

identification, but we have, presumably, only one instantiation of them. Further, if we reject infinite predication, holding that at some stage we can no longer make verifiable or significant additions to what is for us a singly instantiated description, then we have there an individuation. Subsequently a finer analysis or fresh interpretation may indeed allow us to make additions. Yet what alone instantiated the previous description may alone instantiate this fuller one. Prof. Ayer assumes that we shall always have either an incomplete description or a multiple instantiation or no way of telling that we have a unique instantiation. But of this he can have no proof; and it is not absurd to leave open the alternative of framing ultimate descriptions, in Laplace's imaginary cosmic formula these would be wrapped up; nor is it absurd to think of unique instantiations within specified or say microcosmic, contexts. Even on the assumption of unique spatio-temporal location, which was long reckoned a sufficient if not necessary ground of individuation, we can exclude the possibility of multiple instantiation of any definite description that contains a spatio-temporal element. Prof. Ayer says, however, that being in one place at a time is a relation and not a proof of individuality. This is far from certain. Being in a place is rather a property, I should think, and being in one place at one time is a property of only one thing. It is perhaps nothing more than a hypothetical property, something to help give application of the idea of individuality. But all properties, being universals, are in like status.

(7) Prof. Ayer comes to the conclusion that indicators are used ordinarily to mean a claim of instantiation of some certain selection of predicates. Now any set of predicates that is "a certain selection" must be one singled out from all other predicates; which is to say it is one which is unique. It is therefore itself a case of individuation. It is also a case of instantiation, for it instantiates the predicate, 'a certain selection.' So it is an instance of unique instantiation. It may be materially instantiated also, but that is now secondary, for the question was whether we have unique instantiation and we see that we do have it whenever we have (a) unique selection and (b) a set of predicates instantiating 'unique selection'. Whether there exist things which in turn instantiate the set of predicates is a secondary question. Prof. Ayer argues that we have no assurance either of individuation or of unique instantiation. But when his argument comes around to 'a certain selection of predicates' he tacitly assumes and employs both individuation and instantiation.

(8) It is sometimes more difficult to tell whether a predicate has numerous instantiations than whether it has just one. Such predicates as 'lawful heir to the estate of —', 'flawless performance of the composition —', 'where blue is immedi-

ately distinct from green' are examples. If we find a second instantiation of a predicate, its secondarity will make it unique; so will tertiarity make a third instantiation unique, and so on. Having the instances one by one, we have all there is, and whatever question there may be concerning instantiation will be a question more about plurality than about singularity. How the same thing can be many, this is perhaps a harder question than how something can be just one.

(9) Since according to Prof. Ayer each of us is to determine by selections of predicates what if anything shall stand as an individuating description, what is the need of submitting our selections to anyone else? All that others are to do is to show us whether they have caught our meaning, we being the sole judge. If I know first and last whether I have described something individual, I need no one to tell me so. Communication is irrelevant to the question. We are courts of original jurisdiction in this; we say finally whether the fact is such and such, whether something  $x$  is an instance of  $\phi$ . We may err, it is true; but hardly in the act of judging, for that is primary and incorrigible. The error is rather a breach of convention, and convention, too, is irrelevant: I see things blue and hear them loud, whatever else others, and myself in association with others, may find it convenient to call them. Judging, as it is an expression or fiat of an individual, informs its object with individuality.

(10) Since an indicator is a sign of a presumably unique thing, the question of whether it is expressible as a predicate or not is, as Prof. Ayer says, a question of the differentiating possibilities of predicative language. But this is not right away a question of the possibility of definite descriptions or of their instantiation. Rather, it is a question of onomatology. Now a proper name may take rise spontaneously, like the name of a ship, or it may arise from association or from characteristics conspicuous in the object. Then it is analyzable into such characteristics, associations, or spontaneous conditions. All of these are expressible through predicates. What remains to the name itself? It seems only this: a signal of those predicates; the name 'Shakespeare', for example, perhaps standing originally for one noted as a lancer, and other names giving us such terms as epicure, dunce, bacchanal, sadist. Of course in time the name becomes generic and new means of distinguishing any one bearer of it have to be found: a sign that individuality is local more often than we might suppose, or that it is a novelty and dies out as soon as the novelty has been (as always may happen) absorbed in the generality of our language. Does this make a proper name a shorthand predicate? It seems, contrary to Ayer, that it does. Shorthand, being vicarious language, is to its principal just as indicators are to theirs; only, the onomatolo-

gical ancestry of the indicators is so often lost in antiquity that we can seldom give it fully. Supposing then that indicators may be analyzed into descriptions of the facts of their genesis or of their denotation, we can say that they represent or they are capable of representing just those facts; a unique set of facts and therefore the instantiation of a definite description.

(11) No doubt an indicator, abstracted from its history, does admit of an ostensible independence. It is a cipher. The thought of translating it into general terms or reducing it to something else becomes impertinent; as well think of reducing poetry to orthography. But this is all a deception. It neglects the fact that we have cut off the indicator from its ancestry. Thus isolated, the indicator does simulate the unique, imponderable character we thought it had, but only thus. Was there some reason, nevertheless, for ascribing that character to it? If so we can, theoretically, give an analysis of the reason. Was there none? In that case we can, theoretically, give the analysis of the piece of arbitrariness, caprice, or what not that is responsible. In giving such analyses we speak in descriptive, predicative terms. And thus the indicator, or I should say the meaning of the indicator, is got into predicate terms. I specify that it is the meaning of the indicator rather than the indicator itself because the latter may be in abstraction only some mark, gesture, emblem, or other 'sign-vehicle'.

(12) Prof. Ayer's conclusion that the substance-property question is answerable or perhaps I should say dismissible by reason of his finding that indicators are replaceable with selected predicates, is open to doubt. Indicators, he says, do not signify properties or substances, but a certain selection of predicates. But indicators, as shown in (10), are traceable to knowable, describable origins; and since the descriptions of these will be in terms which signify properties, it will not be right to say that indicators do not signify properties. Though the signification is indirect, it still must hold inasmuch as 'signify' is surely transitive. Of course, as Prof. Ayer says, indicators do not describe properties. Yet, through convention, they epitomize or signalize them. Only if predicates could not be taken to represent properties could he be right; and he allows that they represent properties. As for substances, it is good to agree with Prof. Ayer, though not quite on his grounds; rather, on the ground that, indicators having been shown to recede into predicates, which signify properties, there is nothing more than properties for an indicator to signify. Substance, being presumed to differ from properties, is therefore not signified by indicators.

*Louisiana State University, U.S.A*

## LOGICAL AND PRACTICAL CONTRADICTIONS

By BERNARD PEACH

TWO articles in *ANALYSIS* (13 : 2)<sup>1</sup> raise the interesting and important question whether an utterance can be contradictory in one sense and not in another ; and whether therefore there are two different kinds of contradiction : "logical" and "practical". When this distinction, which is implicit in the two articles, is made explicit it indicates that although statements such as "I have completed an infinite number of acts" are not logically contradictory, there are still justifiable interpretations according to which they are practically contradictory. In a final section it is suggested that the relation between practical contradictions and logical contradictions indicates that practical consistency is basic, logical consistency derivative. A concluding suggestion is that certain contrafactuals are true as wholes because they indicate in their antecedent the falsity of one of the pre-suppositions of their consequent.

## I

Mr. Watling says, opening his argument :

"A collection of acts has been finished if, and only if, every one of them has been performed. When the collection is infinite the performance of every one involves performing one more act than any finite number, but there is nothing contradictory about this."<sup>2</sup>

Mr. Black says, concluding his argument :

"... to pronounce in an assertive tone of voice, the sentence, "Jones honestly asserted that he went to the pictures but that he did not believe that he went" without the intention of giving the words an unusual meaning would be to *misuse* language. It would not be the kind of misuse involved in pronouncing assertively the words "Runcibles are chuffable" ; nor the kind of misuse involved in saying "Every triangle has exactly two sides" ; nor the kind of misuse involved in announcing without qualification "A virus is non-animate". It is not a case of nonsense, or logical contradiction, or unqualified application of a term to a border-line case. The sentence in question might be called "inoperative", because its truth would require the falsification of one of its own pre-suppositions. We could *give* it a sense, if we chose. But that would require a change in our language."<sup>3</sup>

In the light of the distinctions suggested by Black it is advisable to amend Watling's final phrase to read "but there is

<sup>1</sup> Max Black, "Saying and Disbelieving", *ANALYSIS* 13 : 2, 25-33 ; John Watling, "The Sum of an Infinite Series", *Ibid.*, 39-48.

<sup>2</sup> Watling, *ibid.*, p. 39.

<sup>3</sup> Black, *ibid.*, p. 33.



nothing *logically* contradictory about this". Black's essay implicitly distinguishes between logical and practical contradictions; and although there is nothing logically contradictory in the concept of finishing an infinite number of acts, by performing one more act than any finite number, there is a practical contradiction involved. Black might prefer to call it an "operative" contradiction, since his criterion applies to it: The statement "I have finished an infinite number of acts" requires for its truth the falsification of its own presupposition, in normal usage at least, that anything that has been finished is finite. In the remainder of his essay, by using suggestions from Taylor,<sup>1</sup> Whitehead and Aristotle, or by stipulation, or by analysis of ambiguities, Watling gives "I have finished an infinite series of acts" a sense that requires a fairly radical change in our language: It means "I have done one more than any finite number of acts".

This is not a logical contradiction, but a change in the meaning of the term 'finishing'. It would be a logical contradiction if Mr. Watling were asserting, without qualification, that an infinite number of acts could both be finished and not be finished. But he is not asserting this. He is explaining that in the phrase "finishing an infinite number of acts" 'finishing' must be understood in a special way.

In support of this interpretation, Watling refers to the earlier paper by Richard Taylor<sup>2</sup> on an earlier paper by Max Black in which Taylor warns against confusing difficulties of imagination with self-contradictions. Taylor defines a discrete infinitude as a collection which has not both a first and last member and asserts that although it is difficult to imagine doing an infinite number of acts in a finite time there is no self-contradiction because of this definition of infinitude. Suppose we remove the physical limitations upon the rapidity of our thought and speech so that we could pronounce 'one' in one minute, 'one-half' in half a minute and each succeeding number in half the time of the former, not decreasing the rate of acceleration in our speech. Then it will take just two minutes to enunciate the series 1,  $\frac{1}{2}$ ,  $\frac{1}{4}$ , ...; and infinitely many numbers will have been enunciated.

Taylor also takes account of the ambiguity of the term 'end' because of the difference between infinitude of division and of extent. No process conceived as divisible into intervals of the series 1 minute,  $\frac{1}{2}$  minute,  $\frac{1}{4}$  minute . . . could last forever, although it is endless in the sense of having no last discernible member.

Watling joins Taylor by pointing out that an infinite series has a finite sum. He also agrees in principle with Whitehead and Aristotle in proposing an answer to certain of Zeno's paradoxes; Achilles catches the tortoise by performing an act, or a series

<sup>1</sup> "Mr. Black on Temporal Paradoxes", *ANALYSIS* 12: 2, 38-44.

<sup>2</sup> *Ibid.*



of acts, whose temporal span or spatial span is infinitely divisible and whose sum is finite—just equal to the time or distance he must run to overtake the tortoise.

## II

Black's proposal that we need to distinguish various kinds of misuses of language is relevant to these issues. We do not ordinarily say, "I have completed an infinite number of acts" (even though, in one sense, we do it infinitely many times each day). We do not ordinarily say "I have performed an infinite collection of acts". We do not ordinarily say "I have enunciated infinitely many numbers". Watling, Taylor, Whitehead, and Aristotle have pointed out how we are to understand them if they should occur. They have pointed out that some of the terms are ambiguous in natural language and that in some of these senses they are not logically self-contradictory; or they have proposed definitions and interpretations that *give* them a sense that is not logically self-contradictory. This same appeal to "common" usage, however, permits other interpretations also. Part of the "scope" of these interpretations comes from the range of common usage. Part of it comes from the range of situations or meanings covered by "presupposition". Black summarizes an earlier treatment of this topic<sup>1</sup> in the present paper by appealing to the notion of "signification"; the range of things that speech may signify includes not only the speaker's actual utterance but also his "mental state" (feelings, emotions, memories, intentions) at the time of the utterance; and numerous other factors in the context in which the utterance is made.

These statements permit—by the same kind of appeal to the ambiguities of common usage—interpretations that *are* logically self-contradictory. Take, for example, "I have performed an infinite number of acts". *One* sense of it is certainly, "I have completed a series of acts that cannot be completed". Watling has pointed out that *another* sense is "I have performed one more act than any finite number" and that this, *as it stands*, is not explicitly logically self-contradictory. Some question remains, however, because his claim depends upon an incomplete analogy:

Since the propositions "There are an infinite number of terms in the series 1 2 3 . . ." and "There are an infinite number of stars in the universe" are not contradictory, it is difficult to see how "I have performed an infinite number of acts" can be contradictory: for this receives an exactly parallel translation—"I have performed one more act than any finite number".<sup>2</sup>

The analogy is not complete because of the difference between "There are . . ." and "I have performed . . .". The formal translations of the two types of statement differ and therefore the

<sup>1</sup> "Definition, Presupposition and Assertion," *The Philosophical Review*, Vol. 61 (1952),

532-550.

<sup>2</sup> Watling, *ibid.*, p. 39.

evaluation of their logical consistency is not to be judged merely by claiming that if one type is not contradictory then the other is not. More important, the latter statement differs from the two former because the presuppositions of "There are . . ." and "I have performed . . ." are different. The presuppositions of the latter are primarily in the practical area of human actions and capabilities. No such reference is essential to the former. The scope of these non-logical factors indicates that the issue of contradictoriness cannot be decided by remaining exclusively within the categories of logic. It calls for an examination of the concept of practical contradictions.

### III

Logical contradictions are identified in terms of syntactic or formal characteristics of one statement. A practical contradiction cannot be identified in this way. The circumstances of its utterance, the mental state of its utterer and other factors in its general context must be taken into consideration. Black's example of the man who says " $p$  but I don't believe  $p$ " is an utterance which demands this approach. It is not logically a contradiction. But a presupposition of asserting ' $p$ ' is that the person who asserts it believes it. The contradiction is between a practical circumstance presupposed by the fact of its utterance and the denial, by the utterance itself, of this practical presupposition.

This type of utterance with the range of factors involved in determining its contradictoriness has its counterpart in imperatives and hortations. Those which are contradictory are called by C. I. Lewis "pragmatic contradictions". In the following passage Mr. . Lewis is discussing the context of ethics but his remarks apply generally :

. . . it is the Cyrenaic who, in words, repudiates this categorical imperative [Be consistent, in valuation and in thought and action]. He repudiates concern for any future : tomorrow is another day. Of course he contradicts himself—not formally but pragmatically. There would be no logical inconsistency in his hortation, "Have no concern for the future", if it should be found engraved by lightning on a rock. But for us to take seriously one who puts it forward, or for anyone to take himself seriously in accepting it, would imply exactly such concern as this injunction advises that we repudiate. The content of the injunction is incompatible with giving heed to this—or any other—injunction.<sup>1</sup>

<sup>1</sup> C. I. Lewis, *An Analysis of Knowledge and Valuation*, La Salle, (Ill.), 1946, Open Court, p. 481.

As Mr. Lewis points out there is no logical contradiction involved. No formalization of the hortation would reveal a self-contradiction within the statement itself. The contradiction is between the content of the injunction, that no heed be paid to anything, and a presupposition of any person who makes an injunction (or any situation in which a normal person makes an injunction), that heed be paid to this injunction. Such a situation differs from the previous example. It cannot be said that the injunction in order to be true requires the falsification of one of its presuppositions. Injunctions are not strictly to be considered either true or false. But they are to be taken seriously or not. Therefore this type of contradiction is a practical one between recommendations, one of them implicit, the other explicit. The presupposition of self-reference in this type of injunction ("Take all serious injunctions seriously") is contradicted practically by the utterance "Don't take any injunction seriously".

The broad scope of practical contradictions has received considerable attention recently in a series of articles in *Mind*.<sup>1</sup> F. B. Ebersole has attempted to summarize the results of this discussion and to define 'practical contradiction' in a group of ten specifications of the sense in which sentences which are practical contradictions are "somehow falsified either by the utterance which designates them or by the propositional attitude which is expressed in their utterance". Ebersole's definition makes explicit the variety of practical contradictions but it omits the important injunctive factor stressed by Mr. Lewis. This aspect can be retained, along with all the essentials of Ebersole's definition, by including the concept of signification.<sup>2</sup> A practical contradiction is an utterance that is incompatible with at least part of its signification. Incompatibility in turn has two variants. The first is the incompatibility between truth and falsity of declarative utterances. A declarative utterance is practically contradictory if, in order to be true, one of its presuppositions must be false. When the crucial presupposition is made explicit and combined with the declarative utterance the result is an explicit logical contradiction. For example, a presupposition of "There is no truth" is "There is some truth"; combined, they constitute an explicit logical contradiction. The second incompatibility is that of imperatives or optatives. When the critical presupposition of a practically contradictory imperative (or optative) is made explicit and joined with the original utterance the results is an order (or an exhortation) to do and not to do the same thing. Mr. Lewis's example illustrates this type of practical contradiction. A presupposition of a

<sup>1</sup> D. J. O'Connor, Vol. 57 (1948), 358-359; L. J. Cohen, Vol. 59 (1950), 85-87; P. Alexander, *ibid.*, 536-538; M. Scriven, Vol. 60 (1951) 403-407; P. Weiss, Vol. 61 (1952) 265-268; W. V. Quine, Vol. 62 (1953) 65-67; F. B. Ebersole, *ibid.*, 80-85.

<sup>2</sup> Cf. Black, 'Definition, Presupposition and Assertion', especially sections II and III.

serious injunction is that injunctions ought to be heeded. The Cyrenaic who utters an injunction to disregard all injunctions is exhorting us to pay no heed to any injunction and to pay some heed to some injunctions. This type of incompatibility is not a logical contradiction.<sup>1</sup>

With these distinctions in mind it is apparent that the utterances offered by Watling and Taylor permit interpretations that make them practical contradictions because they are subject to the first type of incompatibility. "I have completed an infinite number of acts" is not logically contradictory as it stands. But a common presupposition of the utterance "I have completed . . ." is that I have no more to do. A common presupposition of ' . . . an infinite number of acts ' is that there are always more to do. This interpretation gives the result, when the two presuppositions are explicitly conjoined, that I have no more acts to do and that I have more acts to do. Watling rightly points out that there is a sense in which this statement is not logically contradictory. But it is still questionable whether, even according to this interpretation, a practical contradiction is avoided. Take Watling's proposed translation, "I have done one more than any finite number of acts". The critical presupposition here is again the presupposition of the serious utterance of "I have done . . ." One presupposition of the phrase "I have done . . ." as commonly used is that there are no more to do. Combine this with 'more than any finite number' and the result is the logically contradictory statement that I have no more acts to do and I have more than any finite number to do. That there is another possible interpretation does not rule out this one. The same kind of consequence follows from Taylor's example, "I have enumerated infinitely many numbers". One way in which the possibility of interpreting this statement as a practical contradiction would be clearly and obviously avoided would be by stating it without reference to human abilities and activities at all: "Any finite time is infinitely divisible (in thought or theory)".

Another way of avoiding the possibility of interpreting it as a practical contradiction is by using 'infinite-1' and 'infinite-2' with the stipulation that the first means 'infinite in extent' and the second 'infinite in divisibility'. Then Taylor and Watling are saying that there is no logical contradiction in the statement "I have completed infinitely-2 many acts". Again, however, this is a roundabout and even, from the practical standpoint, a misleading way of stating that any finite time is infinitely divisible. Another way of avoiding the possibility of interpreting this

<sup>1</sup> In R. M. Hare's language, it is an 'imperative neustic' contradiction. The first type of incompatibility is an 'indicative neustic' contradiction. Cf. *The Language of Morals*, Oxford, Clarendon Press, 1952, especially pp. 17-21.

statement as a practical contradiction is to assert it in the form of a contrafactual: "If I could enunciate numbers infinitely fast then I could enunciate infinitely many numbers in a finite time. This again is another way of saying that any finite time is infinitely divisible."

#### IV

Practical contradictions have been distinguished from logical ones in two ways: first, negatively, by pointing out that they cannot be identified by formal or syntactic criteria (whereas logical contradictions can); second, positively, by pointing out that avoidance of them requires consistency between actions and presuppositions. Therefore, they are often implicit incompatibilities; whereas a logical contradiction, to be properly so called, must be an explicit incompatibility identifiable in formal terms, or a statement that logically implies such a contradiction. The relationship between the two indicates that practical consistency is basic and logical consistency derivative. C. I. Lewis has commented on this point:

"The validity of reasoning turns upon, and can be summarized in terms of, consistency. And consistency is, at bottom, nothing more than the adherence throughout to what we have accepted. . . . We are *logically* consistent when, throughout our train of thought, or our discourse, we nowhere repudiate that to which we anywhere commit ourselves. . . .

Consistency of thought is for the sake of and is aimed at consistency in action; and consistency in action is derivative from consistency of willing—of purposing, of setting a value on.<sup>1</sup>"

Willing, purposing, valuing are all practical factors in knowing, and consistency of them is practical consistency. We do not *want* to find it necessary to deny something to which we have earlier committed ourselves. The fact that we can commit ourselves to presuppositions that are implicit indicates that more attention needs to be paid to non-descriptive factors associated with the utterance of statements and that these are important not only in the field of ethics but much more widely than has usually been recognized. Black's essays are steps in this direction. In short, to avoid logical contradictions we must take care to avoid practical ones. This means that we must consider carefully the presuppositions and "practical implications" of any statement as well as its actual descriptive content.

A final point to be noticed is the relation between practical contradictions and contrafactuals. Certain types of contrafactuals are statements that would be practical contradictions

<sup>1</sup> C. I. Lewis, *An Analysis of Knowledge and Valuation*, pp. 480-481.



if they did not indicate the falsity of one of their presuppositions. One of Taylor's examples is a case in point: If I were able to count infinitely fast (although in fact I am not) then I could count infinitely many numbers in a finite time. A statement that is inoperative or practically contradictory becomes true, significant, and operative in whatever sense contrafactuals are true, significant and operative, by being preceded by a condition indicating (although not *asserting*) that one of its presuppositions must be recognized to be false.

This clarifies the statement, often encountered in the discussion of contrafactuals, that they "imply a negation of some sort".<sup>1</sup> It is readily apparent with "ability contrafactuals" of the type under discussion. The consequent "I could count infinitely many numbers in a finite time" presupposes "I could count infinitely fast". The contrafactual as a whole is true because the antecedent indicates that a presupposition of the consequent which must be false if the consequent is to be true, is in fact false. It is also apparent in "singular historical contrafactuals" such as, "If Hitler had invaded England in 1940 he would have captured London". A presupposition of "Hitler would have captured London" is "Hitler would have invaded England". The falsity of the presupposition is indicated by the terminology and thus the contrafactual as a whole is true. The same result is apparent in most "natural law contrafactuals", e.g., "If this body were unsupported it would fall"; and with "legal contrafactuals", e.g., "If squares were triangles then their medians would be convergent". The case is less apparent with some other types of natural law contrafactuals, e.g., C. I. Lewis's example, "If C. I. Lewis were to jump from the second story window of Emerson Hall he would be hurt". It is also less apparent with "identity contrafactuals", e.g., "If I were Demosthenes I would not be alive now"; and with "comparative contrafactuals", e.g., "If I had more money I would have more children". In each of these cases the difficulty arises because there are so many presuppositions of the consequents. There are innumerable reasons why Mr. Lewis might be hurt, why I might not be alive now, and innumerable reasons why I might have more children. This merely makes it difficult to see, from an examination of the consequent, what particular presupposition must be false if the contrafactual is to be true. It does not invalidate the proposed explanation of why these types of contrafactuals are true.

*Duke University, U.S.A.*

<sup>1</sup> Cf., e.g. B. J. Diggs, *Mind*, Vol. 61 (1952), 513-527. This is of course only one point in connection with contrafactuals. I hope to deal more completely at a later time with the relation between practical contradictions and contrafactuals.



